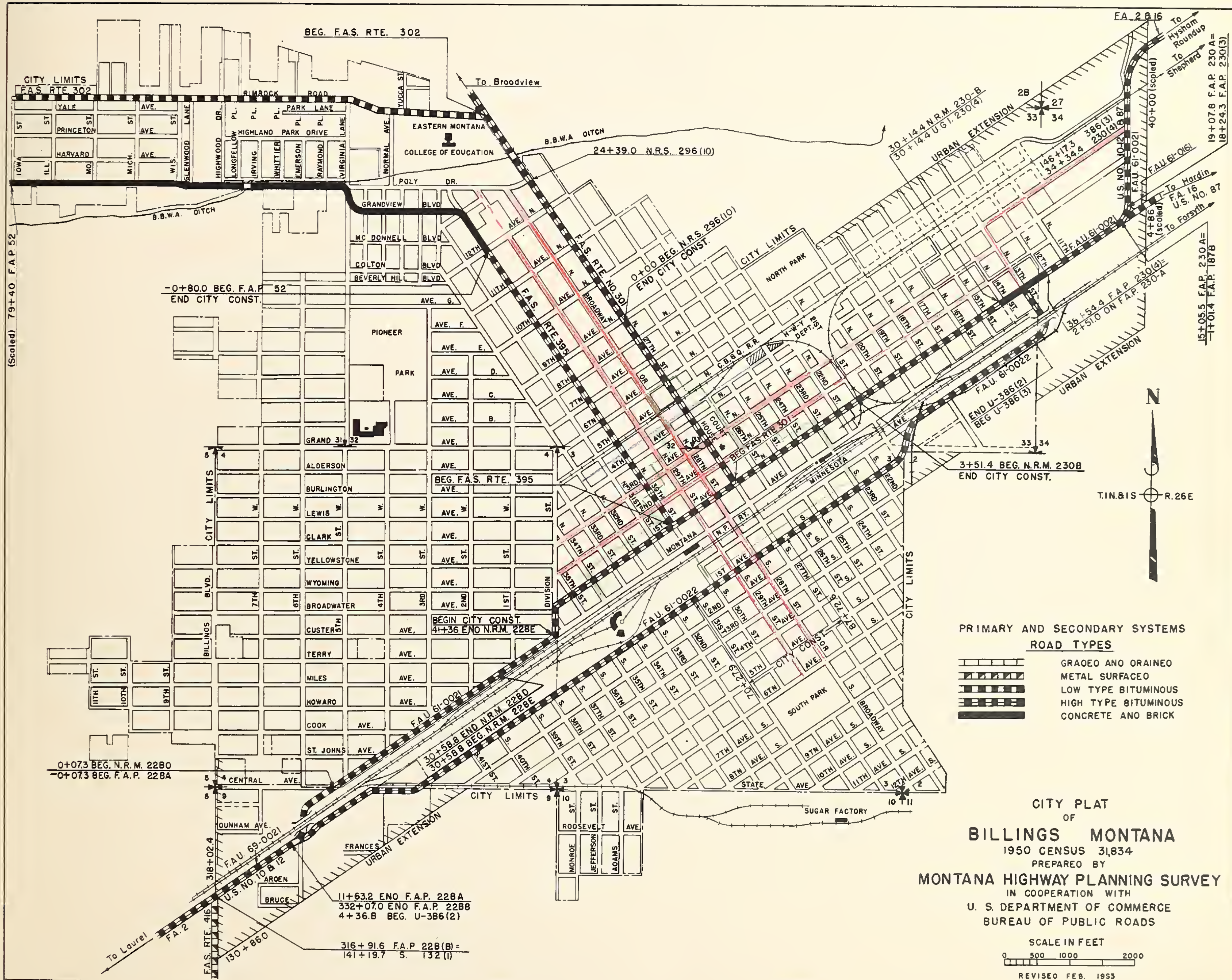
TRAFFIC SURVEY of Billings MONTANA 1947


CITY PLAT
OF
BILLINGS MONTANA
1950 CENSUS 31,834
PREPARED BY
MONTANA HIGHWAY PLANNING SURVEY
IN COOPERATION WITH
U. S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
SCALE IN FEET
0 500 1000 2000
REVISED FEB. 1953
PRIMARY AND SECONDARY SYSTEMS
ROAD TYPES
GRADED AND DRAINED
METAL SURFACED
LOW TYPE BITUMINOUS
HIGH TYPE BITUMINOUS
CONCRETE AND BRICK
N
T.1N.&1S.
R.26E.
BEG. F.A.S. RTE. 302
CITY LIMITS
F.A.S. RTE. 302
RIMROCK ROAD
To Broadview
EASTERN MONTANA COLLEGE OF EDUCATION
B.B.W.A. DITCH
24+39.0 N.R.S. 296(10)
GRANDVIEW BLVD.
MC DONNELL BLVD.
COLTON BLVD.
BEVERLY HILL BLVD.
-0+80.0 BEG. F.A.P. 52
END CITY CONST.
(Scaled) 79+40 F.A.P. 52
PIONEER PARK
F.A.S. RTE. 395
F.A.S. RTE. NO. 301
0+00 BEG. N.R.S. 296(10)
END CITY CONST.
NORTH PARK
C.B.&Q. R.R.
H-W-Y DIST. DEPT.
COURT HOUSE
BEG. F.A.S. RTE. 301
BEG. F.A.S. RTE. 395
BEGIN CITY CONST.
41+36 END N.R.M. 228E
N.P. RY.
F.A.U. 61-0022
F.A.U. 61-0021
30+58.8 END N.R.M. 228D
30+58.8 BEG. N.R.M. 228E
0+07.3 BEG. N.R.M. 228D
-0+07.3 BEG. F.A.P. 228A
SOUTH PARK
SUGAR FACTORY
CITY LIMITS
URBAN EXTENSION
F.A.U. 69-0021
U.S. NO. 10 & 12
F.A.S. RTE. 416
318+02.4
130+86.0
F.A. 2
To Laurel
11+63.2 END F.A.P. 228A
332+07.0 END F.A.P. 228B
4+36.8 BEG. U-386(2)
316+91.6 F.A.P. 228(B)=
141+19.7 S. 132(1)
3+51.4 BEG. N.R.M. 230B
END CITY CONST.
END U-386(2)
BEG U-386(3)
36+54.4 F.A.P. 230(4)=
2+51.0 ON F.A.P. 230-A
F.A.U. 61-0021
F.A.U. 61-0161
U.S. NO. 10 & 12 & 87
30+14.4 N.R.M. 230-B
30+14.4 U.G.I. 230(4)
146+17.3 386(3)
34+34.4 230(4)
40+00 (scaled)
4+86 (scaled)
F.A. 28 & 16
To Hysham Roundup
To Shepherd
To Hardin
F.A. 16
U.S. NO. 87
To Forsyth
19+07.8 F.A.P. 230A=
18+24.3 F.A.P. 230(3)
15+05.5 F.A.P. 230A=
-1+01.4 F.A.P. 187B

A TRAFFIC SURVEY
OF
BILLINGS MONTANA
CONDUCTED BY THE
MONTANA HIGHWAY DEPARTMENT
HIGHWAY PLANNING SURVEY
IN COOPERATION WITH
THE
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY
AND THE
CITY OF BILLINGS

Survey Conducted June-July 1947
Report Submitted October, 1947

GENERAL ADMINISTRATIVE BUILDING, MONTANA HIGHWAY DEPARTMENT

MONTANA STATE CAPITOL

October 21, 1947

Mr. Howard W. Holmes
State Highway Engineer
Montana Highway Department
Helena, Montana

Dear Mr. Holmes:

Complying with your instructions we have completed a traffic study to determine the present and future traffic needs of Billings and the immediate vicinity, and are transmitting herewith our findings and recommendations.

You will note that the principal recommendations provide for a four-lane highway north of the Northern Pacific Railroad between Laurel and Billings, and along Alderson and Sixth Avenue in Billings with a truck by-pass south of the tracks through Billings. It is also recommended that the present highway between Laurel and Billings be retained on the 7% System. It should be understood also that our recommendations constitute a long range program which, it is believed, will satisfactorily provide for all expected traffic in Billings and vicinity for many years in the future.

I would like to call to your attention that this report includes only a very small portion of a considerable volume of data that was collected and analyzed. These many details consisting of tabulations, preliminary charts, estimates and maps are available for inspection.

The success of the survey is due in no small part to the splendid cooperation of Mayor H. E. Biddinger and City Engineer Kenneth L. Chrysler of Billings.

A special staff has been at work for several months intensively correlating information and bringing the study to completion. Mr. Paul R. DeVine coordinated the work of the staff and had the principal responsibility of collecting the data.

Finally, thanks should be expressed to the hundreds of motor vehicle owners and highway users in Montana, whose cooperation has made possible the compilation of much of the basic data used in this report.

Yours very truly,

M. J. Steere

M. J. Steere, Planning Survey Director
Montana Highway Traffic &
Planning Section

MJS/kmb

SUMMARY AND RECOMMENDATIONS

The primary purpose of the Billings traffic survey, as previously stated in this report, was to adequately provide for present and future traffic through the city of Billings and between Billings and Laurel; to determine the most feasible location for a required four lane highway to accomplish these purposes, and to decide the need for a truck by-pass south of the tracks in Billings. The relative merits of the various locations involved are set forth below.

It does not seem to be practicable or economically feasible to construct an additional two lanes along the present location of US 10 for the following reasons:

1. Billings is rapidly expanding westward along the existing highway toward Laurel making the cost of the additional right-of-way needed almost prohibitive, especially since all of the additional right-of-way would have to be acquired on the south as the present right-of-way adjoins the railroad on the north.
2. It would be necessary to widen the overpass at Laurel and replace the underpass west of Billings with a suitable four lane overpass. No cost estimate is available on widening the Laurel overpass, but the most reliable estimate we have on the proposed four lane overpass near Billings is $1,000,000.
3. Traffic in the Billings business district is badly congested at the present time due in a large measure to the routing of US 10 & 12 through the center of the downtown area.

Construction of a four lane highway long the tentative location north of the Northern Pacific tracks (Alternate "A" on Plate 1) would seem to be generally free from the difficulties mentioned in discussing widening of the present highway.

Right-of-way for the rural portion of Alternate "A" should be acquired without too much expense due to the fact that the area traversed is devoted primarily to farming. Some trouble and expense will probably be encountered, however, in widening Alderson and Sixth Avenues through the city.

Only one grade crossing of the Great Northern Railway's branch line to Great Falls will need improving if Alternate "A" is constructed compared with two Northern Pacific Railway main line crossings on the existing location.

The results of this Survey would definitely indicate that the bulk of the external traffic in the Billings area could advantageously use Alternate "A". This proposed location would provide easy access to the important business, commercial and residential areas and would afford a through route comparatively free from congestion for those vehicles that do not wish to stop in the city.

In view of the foregoing facts we wish to respectfully submit the following recommendations:

1. Both Alternate "A" and the south side by-pass in Billings should be placed on the seven percent system immediately.
2. Adequate right-of-way for a four lane highway between Laurel and

Billings should be purchased as soon as practicable for Alternate "A", and sufficient right-of-way should be purchased at the same time for the south side by-pass and for the reconstruction of the underpass near the west city limits of Billings.

3. Sufficient right-of-way should be acquired along Alderson and Sixth Avenues through the city of Billings, to provide a minimum of four twelve foot driving lanes, two ten foot parking lanes and a four foot dividing strip, or a total width of seventy-two feet between curbs.

4. Only two lanes of the proposed rural section of Alternate "A" would need to be constructed at the present time. The other two lanes could be deferred to a later date or until traffic requirements justify further construction. These two lanes in conjunction with the existing highway south of the tracks would provide satisfactory traffic service for some time to come.

5. A suitable connection should be provided between Alternate "A" and the south side by-pass near the west city limits of Billings.

6. The present highway south of the tracks should be retained on the seven percent system to be used primarily as a truck route and feeder road between Billings and Laurel.

HISTORY OF BILLINGS

When Billings came into existence in the summer of 1882 and had within a few months become a city of approximately 2,000 people housed principally in shanties and tents on an alkali flat, it was called the Magic City. This name was appropriate as the rapid building and population increases of Billings have been almost magical.

A directive issued by the Northern Pacific Railway in 1881 stated that a town should be built in the vicinity of what is now Billings. Nothing was done about this however until the summer of 1882 when some engineers for the Northern Pacific Railway arrived at the townsite and began the construction of a large building to house their activities. The first railway train entered the new town of Billings on August 22, 1882 over the Northern Pacific's newly completed line.

The next important milestone in the development of the Billings community was the completion of an irrigation canal,about 1890, known as the "Big Ditch" between Youngs Point on the Yellowstone River and Billings. This canal brought water, a distance of thirty-nine miles, irrigating approximately 20,000 acres of rich bottom land in the vicinity of the townsite.

Billings, due to its location, occupies a strategic place in the commerce of the Northwest. Being the junction point of three large railroads, as well as the natural shipping and trading center of the Clarks Fork and Yellowstone Valleys, has added to its importance.

The principal industries and the backbone of Billings Commercial life today are agriculture, petroleum refining, meat packing, distributing, manufacturing and railways. Cheap fuel and power as well as excellent rail and air service make the city a desirable place to locate from a business and manufacturing standpoint.

The population growth since 1890 is graphically illustrated in figure 1, below:

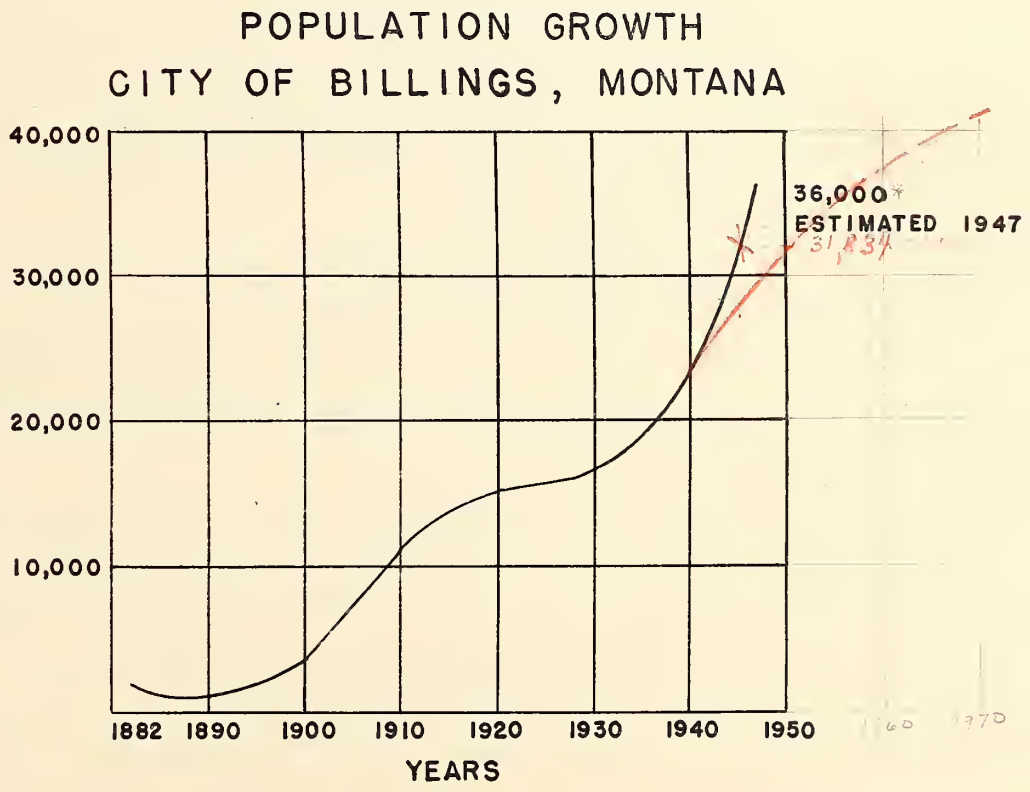


FIGURE 1

DESCRIPTION OF SURVEY

A growing need for better traffic service in and through Billings and between Laurel and Billings has been recognized by the Montana Highway Department for many years. The present two lane highway, which was built in 1929, has been critically overloaded, especially since the decline of gas rationing and the end of the late war.

A four lane highway is considered necessary to adequately serve the anticipated traffic between the two cities but the question still remains as to its proper location. Two feasible locations have been considered. One would follow the present location with the existing highway being widened to four lanes. This would also mean widening the over-pass at Laurel and replacing the underpass near Billings with a four lane overpass.

The other tentative location lies north of the tracks between Laurel and Billings, entering Billings on Alderson Avenue on the west, and continuing on Sixth Avenue to a connection with US 10 east of the city. (Plate 1 - Alternates "A" and US 10 shows the general location of the tentative proposals described above).

In May of 1947, the Montana Highway Commission directed the Planning Survey to proceed with a traffic survey at Billings. Plans were formulated to count the traffic within the city and to operate four external Origin and Destination stations. Actual field work began in June and ended in July, 1947.

Manual classification and density counts were taken at two hundred and ninety stations within the city for periods ranging from eight to twenty-four hours on weekdays. Fourteen of these two hundred and ninety stations were counted for a twenty-four hour period on a weekday, a Saturday and a Sunday. The results of the density counts are shown on Plate 2.

While the manual counts were being taken within the city, four external Origin and Destination stations were operated on the four main highways entering Billings as follows:

Station 1 on US Highway 87 southeast of Billings

Station 2 on US Highway 10 and 87 northeast of Billings

Station 3 on Montana 25 north of Billings

Station 4 on US highways 10 and 12 west of Billings

All four stations were operated for a twenty-four hour period on weekdays. The eight hour periods of operation at each station were rotated on three different days to obtain a better sample of the traffic movements.

All traffic leaving the city was stopped and the drivers interviewed concerning the Origin and Destination of the trip. The type of data collected from each driver follows:

1. Montana or Foreign.
2. Type of Vehicle.
3. Body type.
4. Origin & Destination of Trip.
5. Highway used in entering city.

The Origin and Destination Survey began on June 25, 1947 and ended July 16, 1947. During the time the Survey was in progress 11,701 vehicles, both entering and leaving the city, were counted at the four stations.

Of these 11,701 vehicles, 4,631 or 39.6% were stopped and interviewed. The 4,631 interviews represent 78.9% of the traffic leaving the city during the survey.

Billings was divided into twenty-nine zones for the purpose of coding and analysis. All the interview data were coded, punched and the results summarized on the I.B.M. machines, and have been expanded to an annual daily average for 1947.

Directional classification counts were taken manually at each station for the twenty-four hour period the survey was being conducted. These counts were used in developing the factors that were applied to the interviews to expand them to a twenty-four hour average.

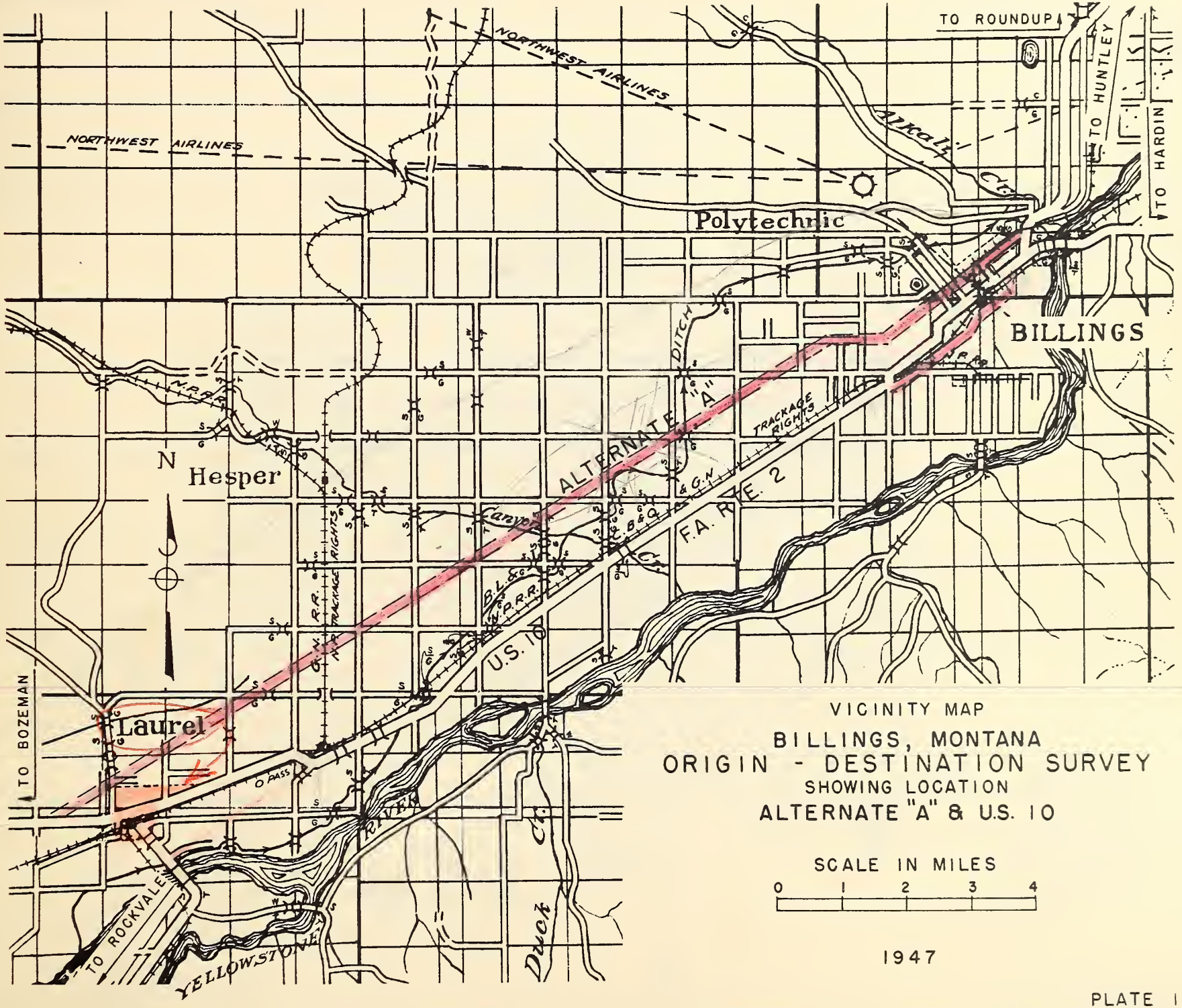
VICINITY MAP

AND

TRAFFIC CHARTS

VICINITY MAP

Plate 1 shows the relative location of Alternate "A" and US 10 between Laurel and Billings and the proposed alignment of the south side by-pass in Billings.



VICINITY MAP

BILLINGS, MONTANA

ORIGIN - DESTINATION SURVEY

SHOWING LOCATION

ALTERNATE "A" & U.S. 10

SCALE IN MILES

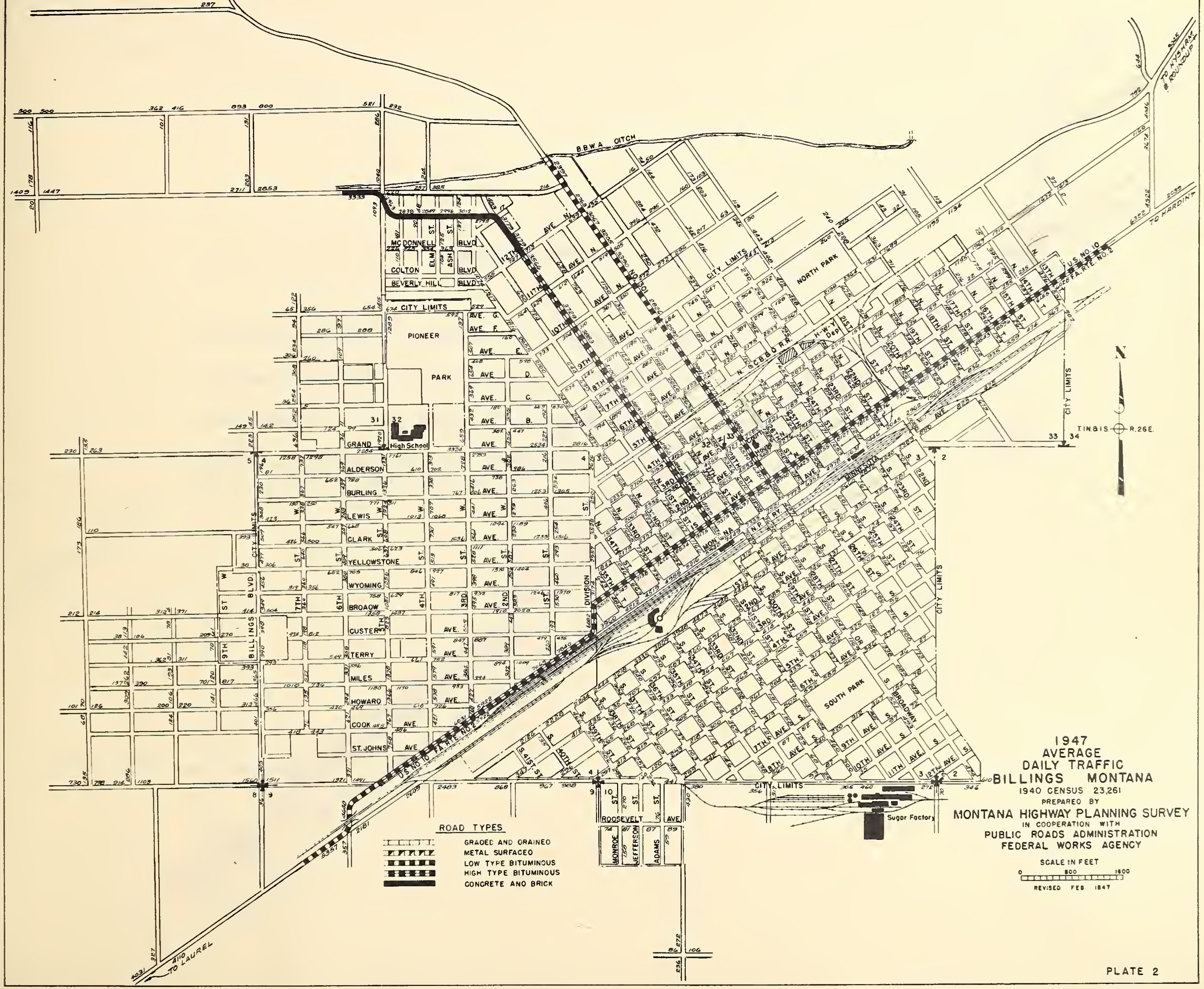
0 1 2 3 4

1947

PLATE 1

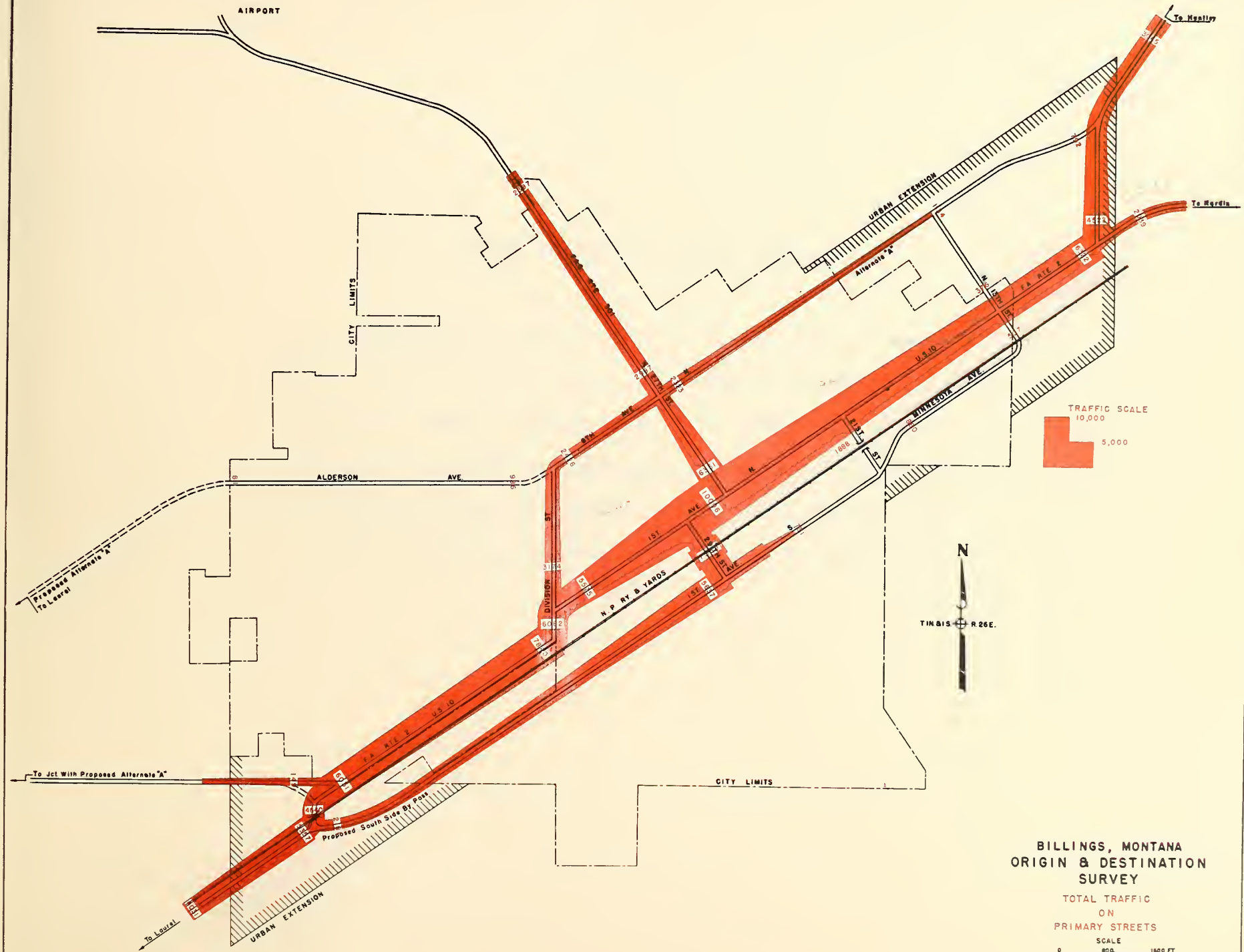
1947 Traffic Volumes

Plate 2 shows the traffic volumes on the streets of Billings and was prepared from manual counts taken in June and July, 1947. All figures shown have been adjusted to an annual average for 1947.


1947
AVERAGE
DAILY TRAFFIC
BILLINGS MONTANA
1940 CENSUS 23,261
PREPARED BY
MONTANA HIGHWAY PLANNING SURVEY
IN COOPERATION WITH
PUBLIC ROADS ADMINISTRATION
FEDERAL WORKS AGENCY
SCALE IN FEET
0 800 1600
REVISED FEB 1947
ROAD TYPES
GRADED AND DRAINED
METAL SURFACED
LOW TYPE BITUMINOUS
HIGH TYPE BITUMINOUS
CONCRETE AND BRICK
PIONEER PARK
NORTH PARK
SOUTH PARK
High School
Sugar Factory
CITY LIMITS
TO LAUREL
TO HARDIN
TO HYSHAM & ROUNDUP
B.B.W.A. DITCH
U.S. NO. 10
F.A. RTE. NO. 2
N.P. RY.
C.B.&Q. R.R.
T.1N.B.I.S.
R.26E.
N
PLATE 2

TOTAL TRAFFIC ON PRIMARY STREETS

Plate 3 illustrates the traffic volumes on the primary streets of Billings and includes both external and internal traffic. The data used in the preparation of this map were obtained from traffic counts taken in June and July, 1947. The counts have been expanded to a twenty-four hour annual average for 1947.



BILLINGS, MONTANA
ORIGIN & DESTINATION SURVEY

TOTAL TRAFFIC
ON
PRIMARY STREETS

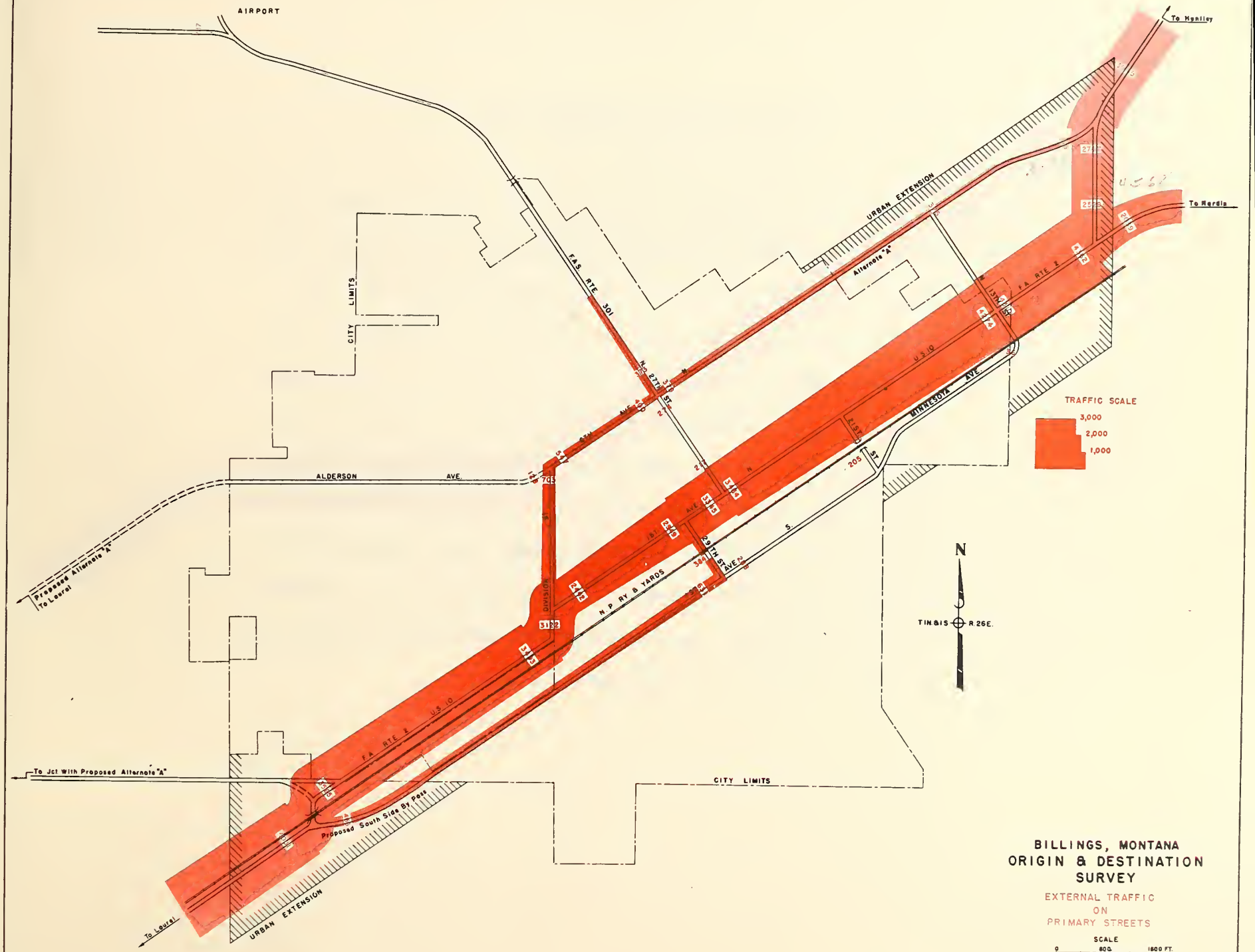
SCALE
0 800 1600 FT.

1947

PLATE 3

EXTERNAL TRAFFIC ON PRIMARY STREETS

Plate 4 shows the flow of external traffic only through Billings on the primary streets. Only traffic passing the four Origin and Destination stations was used in preparing this map. The distribution was determined by analyzing the interviews taken at the four external stations. This plate should not be confused with Plate 3 which includes both external and internal traffic.



BILLINGS, MONTANA
ORIGIN & DESTINATION SURVEY

EXTERNAL TRAFFIC
ON
PRIMARY STREETS

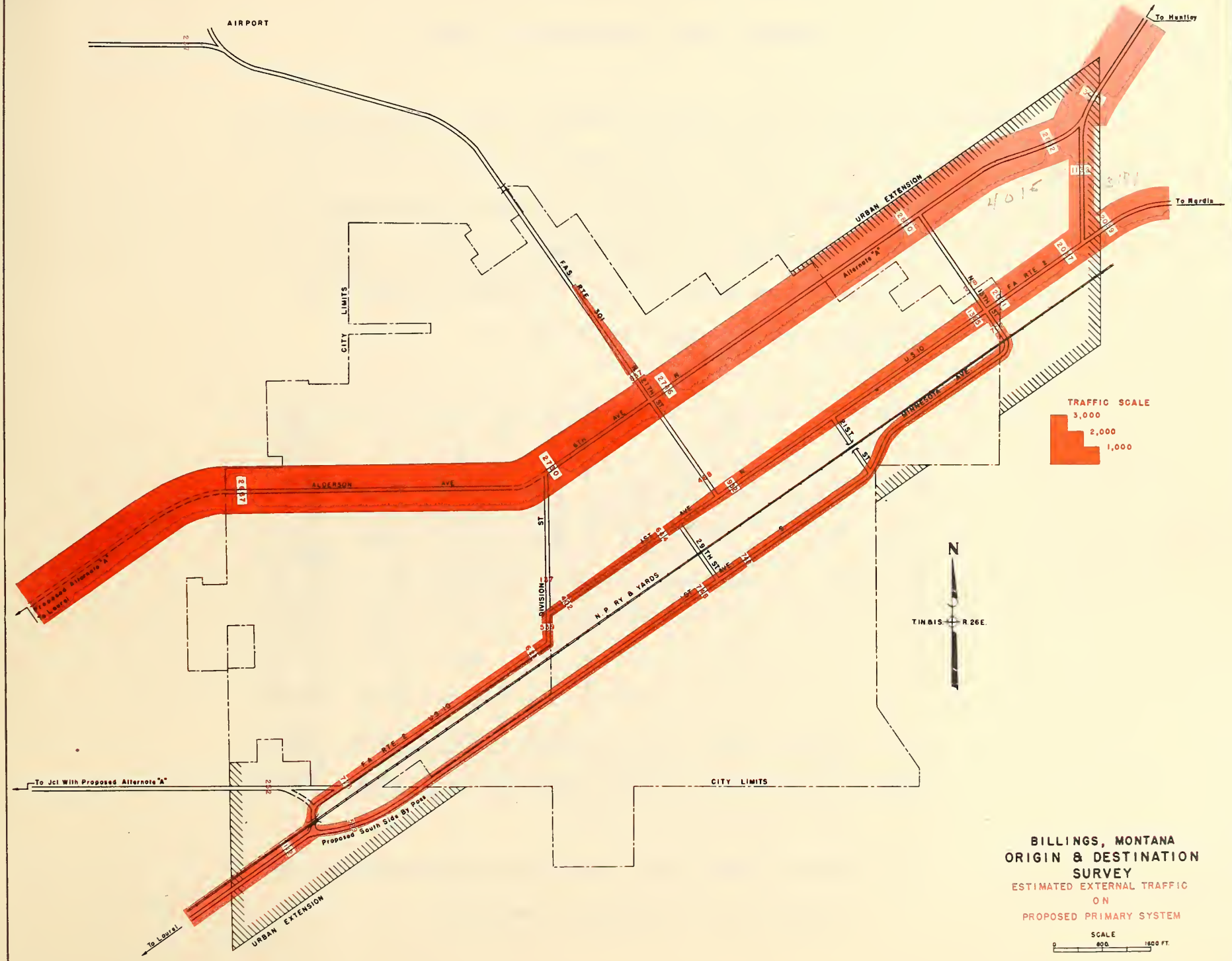
SCALE
0 800 1600 FT.

1947

PLATE 4

ESTIMATED FLOW OF EXTERNAL TRAFFIC

Plate 5 illustrates the probable flow of external traffic through the city if Alternate "A" and the proposed south side by-pass were constructed. Of the 4031 vehicles per day passing station 4, 2667 vehicles or 66.2% could advantageously use Alternate "A" and 589 vehicles or 14.6% would probably use the proposed south side by-pass. The remaining 775 vehicles or 19.2% would probably be distributed on present US 10 and the proposed connection between US 10 and Alternate "A". Of the 5084 vehicles passing station 1 and 2 daily, 2882 or 56.7% would similiarly use Alternate "A" and 702 vehicles or 13.8% would use the proposed south side by-pass. The remaining 1500 vehicles or 29.5% would probably continue to use present US 10.



BILLINGS, MONTANA
ORIGIN & DESTINATION SURVEY
ESTIMATED EXTERNAL TRAFFIC ON PROPOSED PRIMARY SYSTEM

SCALE
0 800 1600 FT.

1947

PLATE 5

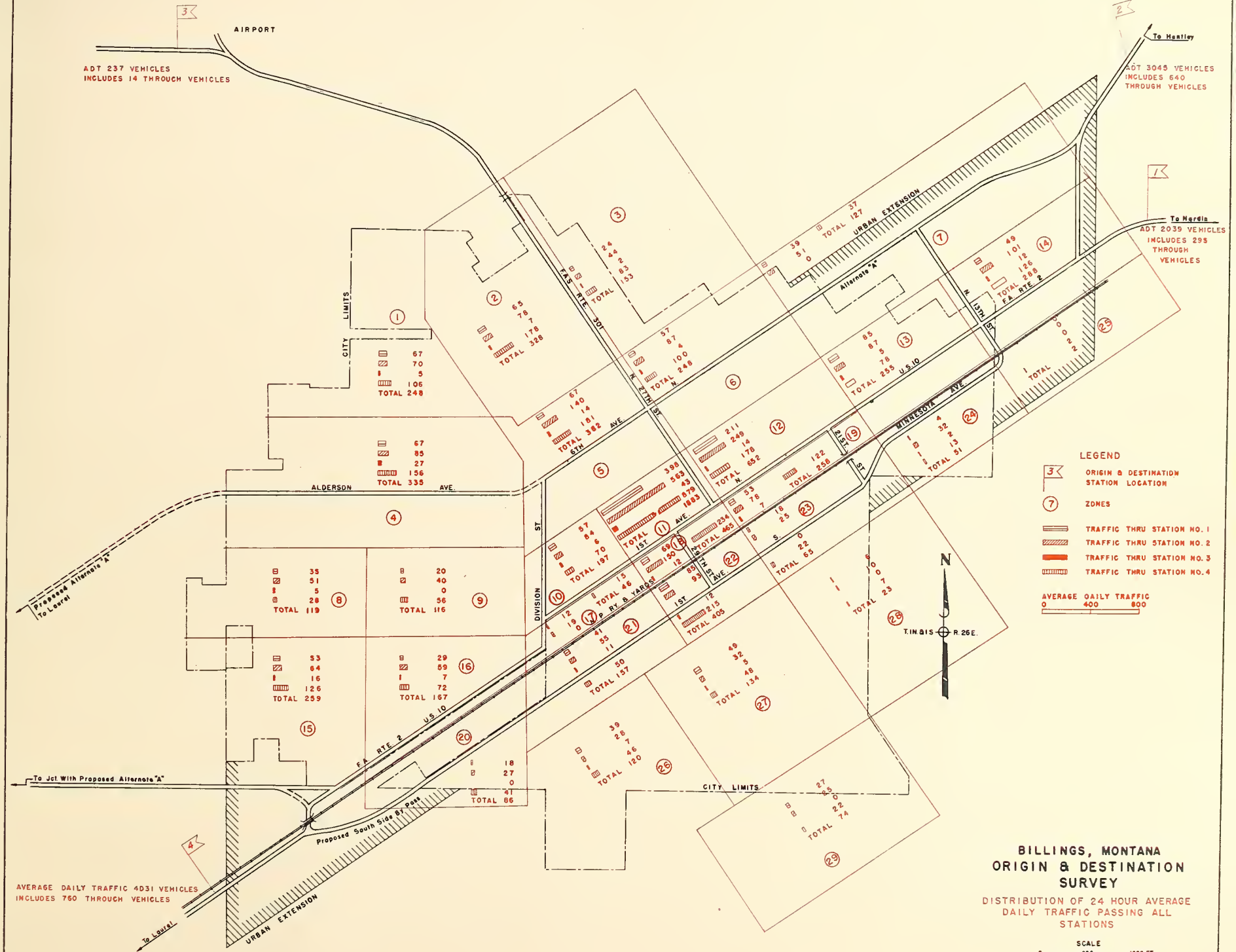
EXTERNAL TRAFFIC DISTRIBUTION BY ZONES

Plate 6 illustrates by Bar Graphs, plotted to scale, the distribution of the external traffic to the twenty-nine internal zones. All figures shown have been adjusted to an annual daily average for 1947. Through traffic has not been distributed. A summary of the traffic passing each of the four Origin and Destination stations is shown in the table below:

Station	Average Daily Traffic	Percent of total External A.D.T.	Percent Commercial	Percent Foreign	Percent to Central Business District /1	Percent Through /2	Percent South of R.R. Tracks
1	2039	21.8	28.3	31.6	39.2	14.5	14.1
2	3045	32.6	21.9	18.1	36.8	21.0	10.7
3	237	2.5	34.6	3.5	34.6	5.9	15.6
4	4031	43.1	21.3	19.3	37.2	18.9	11.6
Totals	9352	100.0	23.4	19.4	37.4	18.3	11.9

/1 Zones 10,11,12,17,18 & 19.

/2 Vehicles that did not stop in the city or stopped only for gas, oil, cold drinks or the like.


AIRPORT
ADT 237 VEHICLES
INCLUDES 14 THROUGH VEHICLES
To Hardin
ADT 3045 VEHICLES
INCLUDES 640
THROUGH VEHICLES
To Hardin
ADT 2039 VEHICLES
INCLUDES 295
THROUGH
VEHICLES
CITY LIMITS
ALDERSON AVE.
6TH AVE.
N. 27TH ST.
DIVISION ST.
MINNESOTA AVE.
N. 13TH ST.
URBAN EXTENSION
Alternate "A"
U.S.10
F.A. RTE. 2
F.A.S. RTE. 307
Proposed Alternate "A"
To Laurel
To Jct. With Proposed Alternate "A"
Proposed South Side By Pass
T.1N. R.26E.
LEGEND
ORIGIN & DESTINATION STATION LOCATION
ZONES
TRAFFIC THRU STATION NO. 1
TRAFFIC THRU STATION NO. 2
TRAFFIC THRU STATION NO. 3
TRAFFIC THRU STATION NO. 4
AVERAGE DAILY TRAFFIC
0 400 800
AVERAGE DAILY TRAFFIC 4031 VEHICLES
INCLUDES 760 THROUGH VEHICLES
BILLINGS, MONTANA
ORIGIN & DESTINATION
SURVEY
DISTRIBUTION OF 24 HOUR AVERAGE
DAILY TRAFFIC PASSING ALL
STATIONS
SCALE
0 800 1600 FT.
1947
PLATE 6